NMR logs II: Distributions of relaxation time $T_2$

- **Shale** – all pores very small, so all water is bound to surfaces

- **Water-bearing rock with small pores** (e.g. siltstone to fine sandstone) – most water not mobile

- **Water-bearing porous rock** – abundant mobile water dwarfs signature of bound water at pore edges

- **Gas-bearing porous rock** – small freely-moving high-kinetic-energy molecules reorient quickly

- **Oil-bearing porous rock** – H of large low-kinetic-energy molecules reorients slowly

Sources: Crane’s Petrophysical Handbook; Baker-Hughes Atlas of Log Responses